

CLAIMS

What is claimed is:

1 1. A method of executing a computer program distributed across a plurality of
2 computers, said method comprising the steps of:
3 a) obtaining available excess computer capacity from a plurality of potential
4 participants;
5 b) partitioning a computer program into a plurality of independent tasks of
6 approximately equal size;
7 c) distributing said tasks to said participants according to available excess
8 capacity;
9 d) determining whether each distributed task will execute within a selected
10 range of other said distributed tasks;
11 e) beginning execution of said distributed tasks;
12 f) receiving completed tasks from said participants; and
13 g) determining whether every task has been executed by at least one
14 participant.

1 2. A method as in claim 1, wherein the step (a) of obtaining available capacity, each
2 of said participants registers a machine, registering each said machine comprises the steps
3 of:
4 i) obtaining a committed number of hours for said registered machine;
5 ii) determining an effective capacity for said registered machine; and
6 iii) determining the normalized excess capacity for said registered machine.

- 1 3. A method as in claim 2, further comprising repeating steps (i) through (iii) until a
2 normalized excess capacity is determined for each said registered machine.
- 1 4. A method of doing business as in claim 3, wherein each participant is compensated
2 responsive to a corresponding said normalized excess capacity.
- 1 5. A method of doing business as in claim 4, wherein a requesting party requests
2 execution of said computer program, said requesting party paying a fee for execution of
3 said computer program.
- 1 6. A method of doing business as in claim 5, wherein said fee is selectively increased
2 or decreased responsive to available normalized excess capacity.
- 1 7. A method of doing business as in claim 4, wherein the normalized excess capacity
2 determined in step (iii) is determined responsive to a probability measurement for said
3 participant.
- 1 8. A method of doing business as in claim 7, wherein the probability measurement
2 is derived from past participation by said participant.
- 1 9. A method of doing business as in claim 8, wherein each new participant is
2 provided with one or more benchmark tasks, said new participants' normalized excess
3 capacity being adjusted responsive to performance of said one or more benchmark tasks.
- 1 10. A method as in claim 1, wherein in step (b) of partitioning of the computer
2 program a plurality of said independent tasks from said partition are assigned to a
3 plurality of participating machines.

- 1 11. A method as in claim 10, wherein after assigning independent tasks, any task
2 determined to be unassigned is randomly assigned to an available machine.
- 1 12. A method as in claim 11, wherein after every task has been assigned to a plurality
2 of said machines, a completion time is estimated for completion of execution of said
3 computer program.
- 1 13. A method as in claim 12, wherein said plan is determined feasible based on said
2 estimated completion time.
- 1 14. A method as in claim 1, wherein the step (d) of determining whether each task
2 will execute within the selected range further includes reassigning any task determined to
3 be unlikely to execute within said range.
- 1 15. A method as in claim 1, wherein as each completed task is received in step (f), a
2 check is made to determine whether said completed task is on schedule.
- 1 16. A method as in claim 10, wherein any participant producing a task that is not on
2 schedule is determined to have a slow machine and other tasks assigned to such slow
3 machines are reassigned to other available participants.
- 1 17. A method as in claim 15, wherein after all said tasks are completed, results from
2 said machines are compared and best solutions are selected from each said task.

1 18. A distributed processing system for transferring excess capacity from a plurality
2 of computers to a party requiring execution of a computer program, said distributed
3 processing system comprising:

4 a plurality of participating computers connected together over a network;
5 means for determining a normalized excess capacity for each participating
6 computer;
7 means for partitioning a computer program into a plurality of independent tasks;
8 means for distributing said tasks to said participating computers according to
9 normalized excess capacity;
10 means for determining whether each distributed task will complete within a
11 selected range of other said distributed tasks and redistributing any of said tasks
12 determined to not complete within said selected range;
13 means for receiving completed tasks from said computers; and
14 means for determining whether each task has been executed by at least one
15 computer.

1 19. A distributed processing system as in claim 18, further comprising registration
2 means for registering participating computers, said registration means comprising:
3 means for obtaining a committed number of hours for a registering computer; and
4 means for determining an effective capacity for said registered computer, the
5 normalized excess capacity being determined from the effective capacity for said
6 registered computer.

1 20. A distributed processing system as in claim 19, wherein each registering user is
2 paid a fee for any normalized excess capacity used by said system, said fee being
3 determined by the sum of available excess capacity.

1 21. A distributed processing system as in claim 20, wherein a person requesting
2 execution of said computer program pays a fee for said execution.

1 22. A distributed processing system as in claim 21, further comprising means for
2 estimating a completion time for execution of said computer program.

1 23. A distributed processing system as in claim 22, further comprising means for
2 determining whether assigned tasks are completed on schedule.

1 24. A distributed processing system as in claim 23, further comprising means for
2 selecting a best solution for each task from received completed task results.

1 25. A distributed processing system as in claim 20, further comprising:
2 means for deriving a probability measurement for each registered user.

1 26. A distributed processing system as in claim 25, wherein the means for deriving a
2 probability measurement comprises:

3 means for measuring execution of tasks; and

4 means for logging measured execution.

1 27. A computer program product for selling unused excess capacity of a plurality of
2 connected computers to a party requiring execution of a partitionable computer program,
3 said computer program product comprising a computer useable medium having computer
4 readable program code thereon, said computer readable program code comprising:

5 computer readable program code means for registering a plurality of participating
6 computers;

7 computer readable program code means for partitioning a computer program into
8 a plurality of independent tasks;

9 computer readable program code means for distributing said tasks to said
10 registered participating computers according to normalized excess capacity;

11 computer readable program code means for determining whether each distributed
12 task will complete within a selected range of other said distributed tasks and
13 redistributing any of said tasks identified as not completing within said selected range;

14 computer readable program code means for receiving completed tasks from said
15 computers; and

16 computer readable program code means for determining whether each task has
17 been executed by at least one computer.

1 28. A computer program product as in claim 27, wherein the computer readable
2 program code means for registering participating computers comprises:

3 computer readable program code means for obtaining a committed number of
4 hours for a computer being registered; and

5 computer readable program code means for determining an effective capacity for
6 said registered computer, the normalized excess capacity being determined from the
7 effective capacity for said registered computer.

1 29. A computer program product as in claim 28, wherein computer program code
2 means for registering computers comprises computer program code means for
3 determining a fee for any normalized excess capacity and a charge to parties requiring
4 program execution, said fee and said charge being determined responsive to the sum of
5 available excess capacity.

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1 30. A computer program product as in claim 29, wherein a person requesting
2 execution of said computer program pays said charge.

1 31. A computer program product as in claim 30, further comprising computer
2 readable program code means for determining whether assigned tasks are completed on
3 schedule and reassigning any tasks determined to not be on schedule.

1 32. A computer program product as in claim 31, further comprising computer
2 readable program code means for selecting a best solution for each task from a plurality
3 of received completed task results for each task.

1 33. A computer program product as in claim 32, further comprising:
2 computer readable program code means for measuring execution of tasks; and
3 computer readable program code means for logging measured execution.